

Effect of Carbohydrate Mouth Rinsing on Muscular Endurance Performance

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ABSTRACT

Not much is known regarding the effect of carbohydrate mouth rinsing (CMR) on muscular endurance performance. Recent research involving runners, cyclists, and sprinters, suggests that CMR can improve performance in endurance exercises. As these studies all involve activities that incorporate the leg muscles we wanted to investigate the effects of CMR on muscular endurance performance by having participants perform a leg press exercise to fatigue. The purpose of this study was to examine the effects of a carbohydrate mouth rinse on muscular endurance performance. Thirty-three participants (20 male and 13 female, age = 26.9 ± 7.9 yrs, ht = 169.7 ± 7.6 cm, wt = 83.6 ± 19.2 kg) participated in a counterbalanced repeated measures study administering a CMR (Gatorade) or flavored placebo solution (MiO). Participants were fitted with a Polar heart rate monitor and asked to sit for three minutes. After three minutes 19 randomly selected participants received a finger prick to collect a drop of blood for glucose and lactate analysis. All participants warmed-up on an exercise bike (STEX S25U Upright Bike S25-series) for 5 minutes between 60-70 RPM at 3-5 intensity. After completion of the warm-up, half the participants were given 25 ml of Gatorade and the other half was given 25 ml of water with MiO. They rinsed for 10 seconds, after which they spit into a water fountain. At the conclusion of the rinse a second glucose and lactate sample was again taken from the selected participants, after which all participants performed a leg press exercise (Pro Maxima FW-20 Inverted Leg Press, Houston, Texas) to fatigue with resistance equivalent to their body weight. At the conclusion of the exercise heart rate, rating of perceived exertion (RPE) using Borg's 6-20 scale, time to completion and number of reps was recorded. A final glucose and lactate sample was also taken on the selected participants. Seven days after the first test had concluded participants performed the same test with the mouth rinses exchanged. Paired t-tests were used to determine significant differences between trials, with alpha set at .05. There were no significant differences in exercise heart rate, RPE, time to completion, number of reps, glucose levels, and lactate levels between trials, $P > .05$. The results of the study suggest that CMR does not improve muscular endurance performance under the conditions described above. It is possible that CMR is only effective when exercise is longer in duration and/or if the exercise is aerobic in nature.

